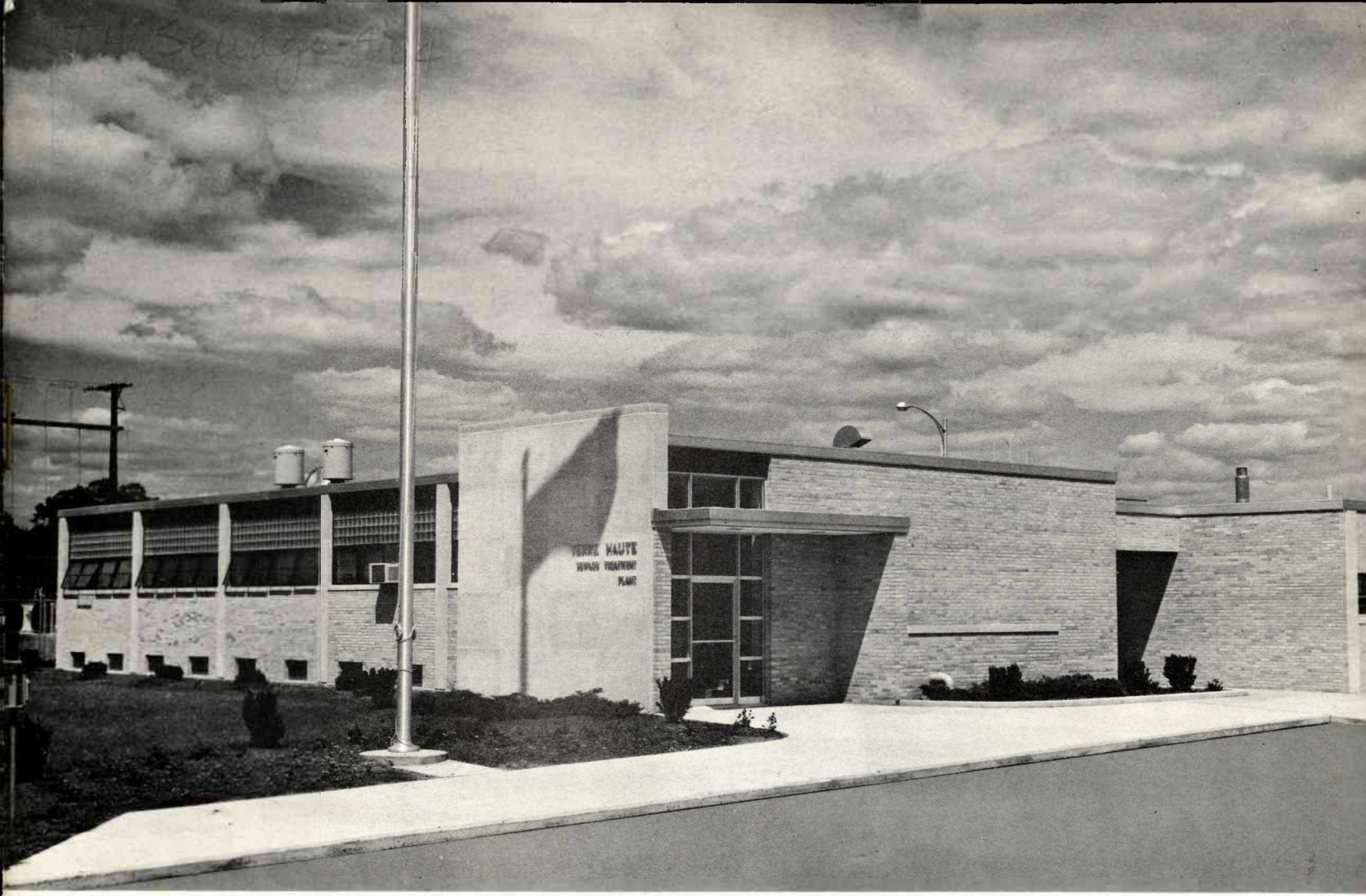

INDIANA ROOM

Terre Haute
Sewage Treatment Plant

1963

TERRE HAUTE, INDIANA

ENGINEER

RICHARD T. HARDMAN and METCALF & EDDY

A JOINT VENTURE

Carmi, Ill. — *Project Design*

Boston, Mass. — *Construction Services*

Interceptor Sewer, Force Main, and Outfall Sewer
Contract No. 1

General Contractor

SQUARE & MARRA — 4990 Massachusetts Ave., Indianapolis, Indiana

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Pumping Station and Sewage Treatment Plant
Contracts No. 2 and No. 3

General Contractor

R. E. DAILEY & CO., INC. — 21675 Telegraph Road, Detroit, Michigan

Subcontractors

CHARLES N. BOHRER INC. ..... *Mechanical*

POTTER ELECTRICAL ENGINEERING & CONSTRUCTION CO., INC. ..... *Electrical*

FORADORI TRUCKING & EXCAVATING SERVICE ..... *Earthwork*

BELDEN CO. ..... *Heating & Ventilating*

CHRISTMAN CO. ..... *Plumbing*

HARTMANN CO. ..... *Roofing*

WABASH VALLEY DECORATING SERVICE ..... *Painting*

BITUMINOUS MATERIALS CO. ..... *Paving*

KING GIVENS ..... *Plastering*

SANTAROSA MOSAIC & TILE CO. ..... *Terrazzo Flr.*

J. D. ARMSTRONG ..... *Landscaping*

PITTSBURGH PLATE GLASS CO. ..... *Glazing*

NOFFKE BROS. ..... *Floor Covering*

CRAWFORD DOOR SALES CO. ..... *Overhead Doors*

CYCLONE FENCE DIV. OF U.S. STEEL ..... *Perimeter Fence*

ENGINEERING METAL PRODUCTS CORP. ..... *Misc. Metal*

PORCELAIN BUILDERS CO., INC. ..... *Porcelain Enamel*

PHOTOGRAPHS BY BRUCE

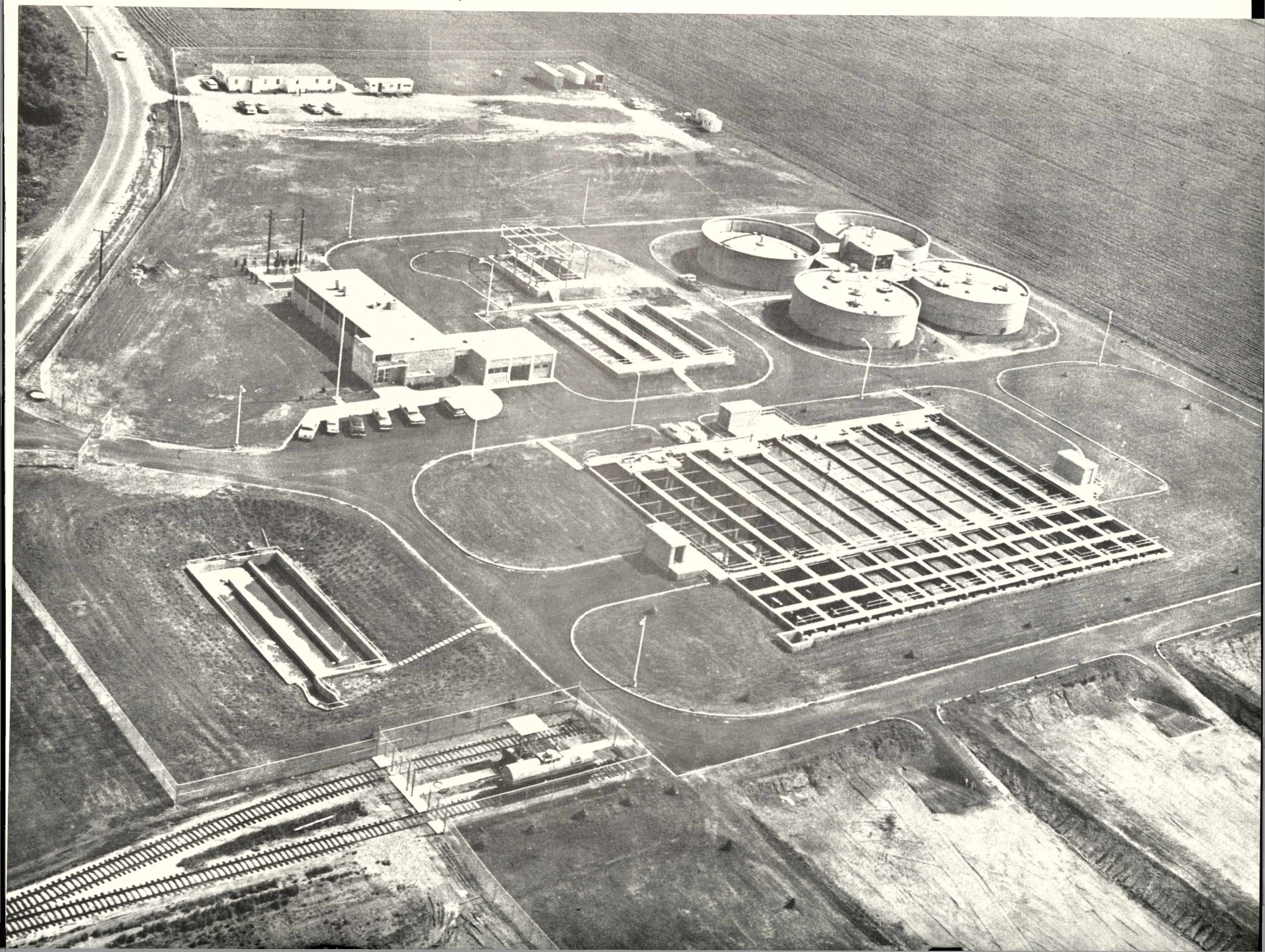
Terre Haute
Sewage Treatment Plant

Dedication

Sunday, August 25, 1963

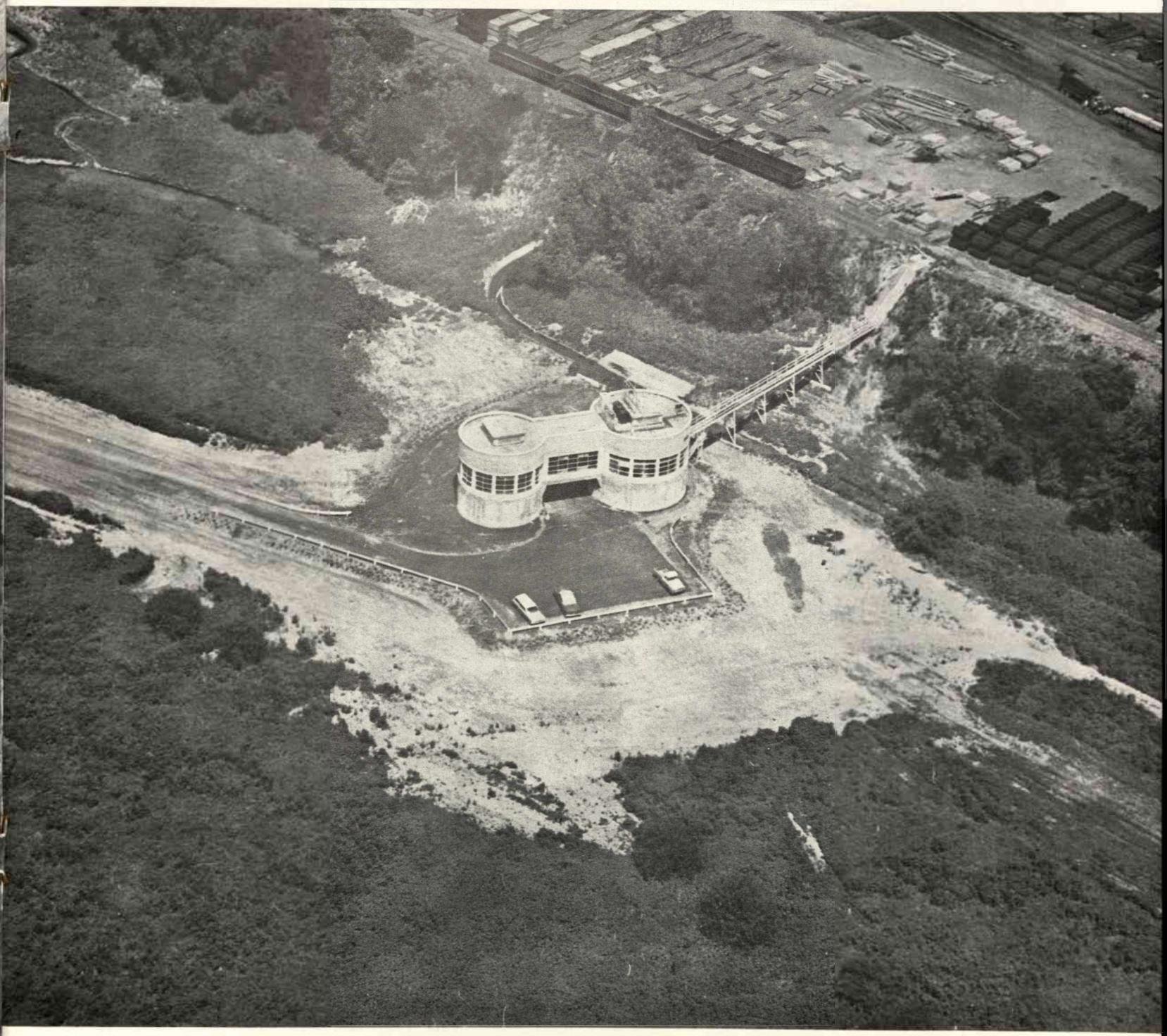
CITY OF TERRE HAUTE, INDIANA

RALPH TUCKER, *Mayor*



PUMPING STATION

Sewage Disposal Project



View of Rack Building, Pump Building and emergency Foot Bridge

CITY of TERRE HAUTE INDIANA

RALPH TUCKER, *Mayor*

On the Banks of the Wabash

August 25, 1963

TO MY FELLOW CITIZENS:

In 1944 the City of Terre Haute was ordered to cease polluting the Wabash River and to take immediate steps to construct a sewage treatment plant in this city.

After a long period of facing obstacles in the courts and waiting for decisions which would permit us to proceed with the program, it finally became possible to actually start construction on March 19, 1962. We now have the newest and most modern sewage treatment plant in the State of Indiana.

It was necessary to eliminate stream pollution to comply with State and Federal regulations imposed upon us. I wish to point out to the citizens of our community that this new and outstanding plant that we are today dedicating affords excellent health and welfare facilities not only to the citizens of Terre Haute but to prospective new industries. We are constantly striving to locate new industries in Terre Haute and they demand an up to date sewer and sewage treatment system. Further, this plant will greatly enhance our recreation program by making possible additional activities on the Wabash River.

Today's dedication is proof positive of the progress and expansion of a greater Terre Haute. You can be justly proud of this new facility in our community.

Yours very truly,

Ralph Tucker

Ralph Tucker
Mayor

SERVING AN INDUSTRIAL AND AGRICULTURAL POPULATION OF 278,000

MAYOR RALPH TUCKER

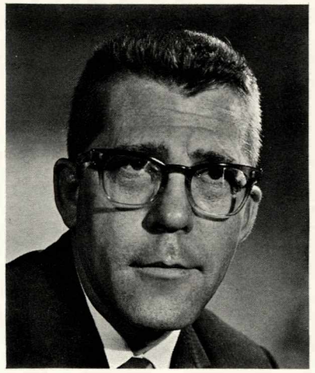
COMMON COUNCIL

City of Terre Haute, Indiana

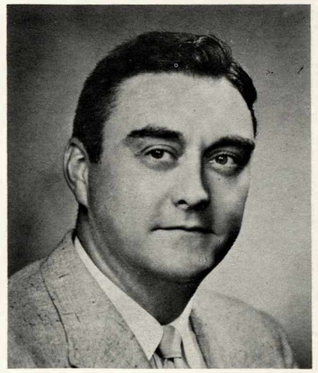
ROBERT X. KELLY
Councilman at Large

MYRON J. BUSBY
Councilman at Large

WILLIAM B. BUTTS
Councilman at Large



LAWRENCE R. JONES,
Councilman, First District



MALCOLM E. BOONE
Councilman, Second District

KATHERINE M. MYRTLE
Councilman, Third District

RAYMOND J. STEWART
Councilman, Fourth District

GEORGE D. KINTZ
Councilman, Fifth District

HOWARD O. GLADDEN
Councilman, Sixth District

Board of Public Works and Safety

City of Terre Haute

RAYMOND F. THOMAS
City Controller
President

Raymond F. Thomas has served as City Controller in charge of the Department of Finance since July 1, 1951; conducted a successful Automotive Business for 30 years, active and recognized in Civic and Fraternal organizations.

Raymond P. Harris, Civil Engineer 1929 Rose Polytechnic Institute, registered as professional engineer and land surveyor in the State of Indiana. Industrial Development and Sanitary Engineer with Dorr Co., Inc. in New York City, N. Y. as Resident Field Engineer on construction and operation of separate sludge digestion sewage treatment plants throughout the United States. From March 17, 1961 to date—City Engineer.

RAYMOND P. HARRIS
City Civil Engineer

FRANK P. CRAWFORD
City Attorney

Frank P. Crawford, City Attorney since 1957, son of Frank J. and Cecelia Parker Crawford, both members of long-established Terre Haute families. Educated in local grade and high schools, Indiana State College and Indiana University (LLB, 1940). U.S. Army 1942-1946 (Major, Armor). Member of Terre Haute Bar Assn. (Pres. 1956); Sixth District Bar Assn. (Pres. 1957-58); Indiana State Bar Assn. (Bd. of Managers 1959-60). Married, has four children and resides 1613 S. 6th St.

City of Terre Haute, Indiana, Sewage Disposal

In late 1944 the Indiana Water Pollution Control Board issued a preliminary order to the city requiring abatement of pollution from the city's sewerage. A final order was issued a year later. The city retained consulting engineers to prepare a report on this matter, which report was completed in August, 1946. The report outlined a trunk sewer, pumping station, and treatment plant as being required to abate the City's pollution going to the Wabash River. In February, 1947, the engineers were authorized to proceed with plans and specifications to fulfill the recommendations in the report. In 1951 the engineers' drawings and specifications were approved by the City's Board of Public Works and Safety, and the State's Stream Pollution Control Board. In February, 1953, bids were received for the construction of these facilities. However, at this time a temporary injunction was granted against the City's proceeding with the construction of these facilities. Four years later the circuit court rendered a decision upholding the city's rights to issue bonds for these facilities, which decision was appealed to the Supreme Court. Finally in January, 1960, the Indiana Supreme Court upheld the constitutionality of the 1943 Stream Pollution Control Act.

The engineers reviewed their earlier plans and specifications, making such changes as were appropriate, and bids were again received on these contracts in July, 1961. Bonds were sold and the contracts awarded before the end of 1961, at which time construction was started.

The trunk sewer was designed to intercept the dry weather flow from the City's combined sewer system. It will also handle more than three times the estimated design flow during storm runoff. The pump station in the flood plain will pump a total capacity of 60 million gallons a day.

The sewage treatment plant is laid out to handle an average daily flow of 20 million gallons a day and may easily be expanded to 30 million gallons a day. The treatment facilities are also laid out so that at some future date, if additional treatment of the sewage effluent is required, a trickling filter plant can easily be added.

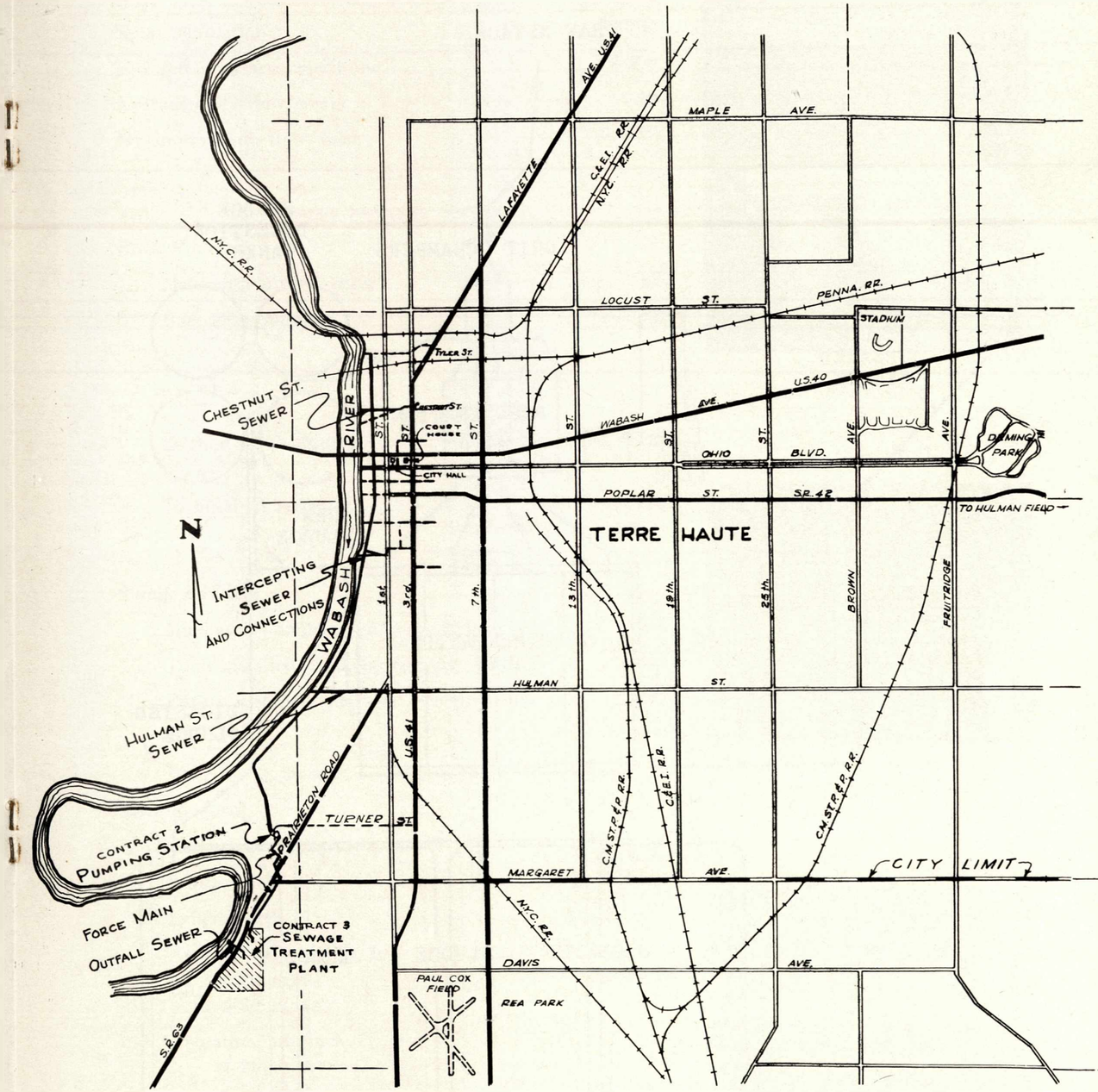
At present, the pumps will handle a total of 50 million gallons a day to the treatment facilities. This amount may easily be raised to 60 million gallons a day when required in the future. In the pumping station two large mechanically cleaned racks remove large objects which would impair pumping and/or treatment.

At the treatment plant the sewage has the sand removed in the aerated grit chamber, receives treatment with air, and then has the settleable solids removed in the sedimentation tanks. From this tank the sewage flows to the chlorine contact tank where chlorine solution is added for disinfection prior to discharge to the river through a submerged outfall.

The solids which settle to the bottom of the settling tanks are pumped to the digestion tanks where through biological action they are converted to methane gas, carbon dioxide and water, together with a humus type material. The gas is used for heating the tanks and the buildings. After the conversion, the then digested sludge is drawn off to the lagoons for dewatering and final disposal as a humus.

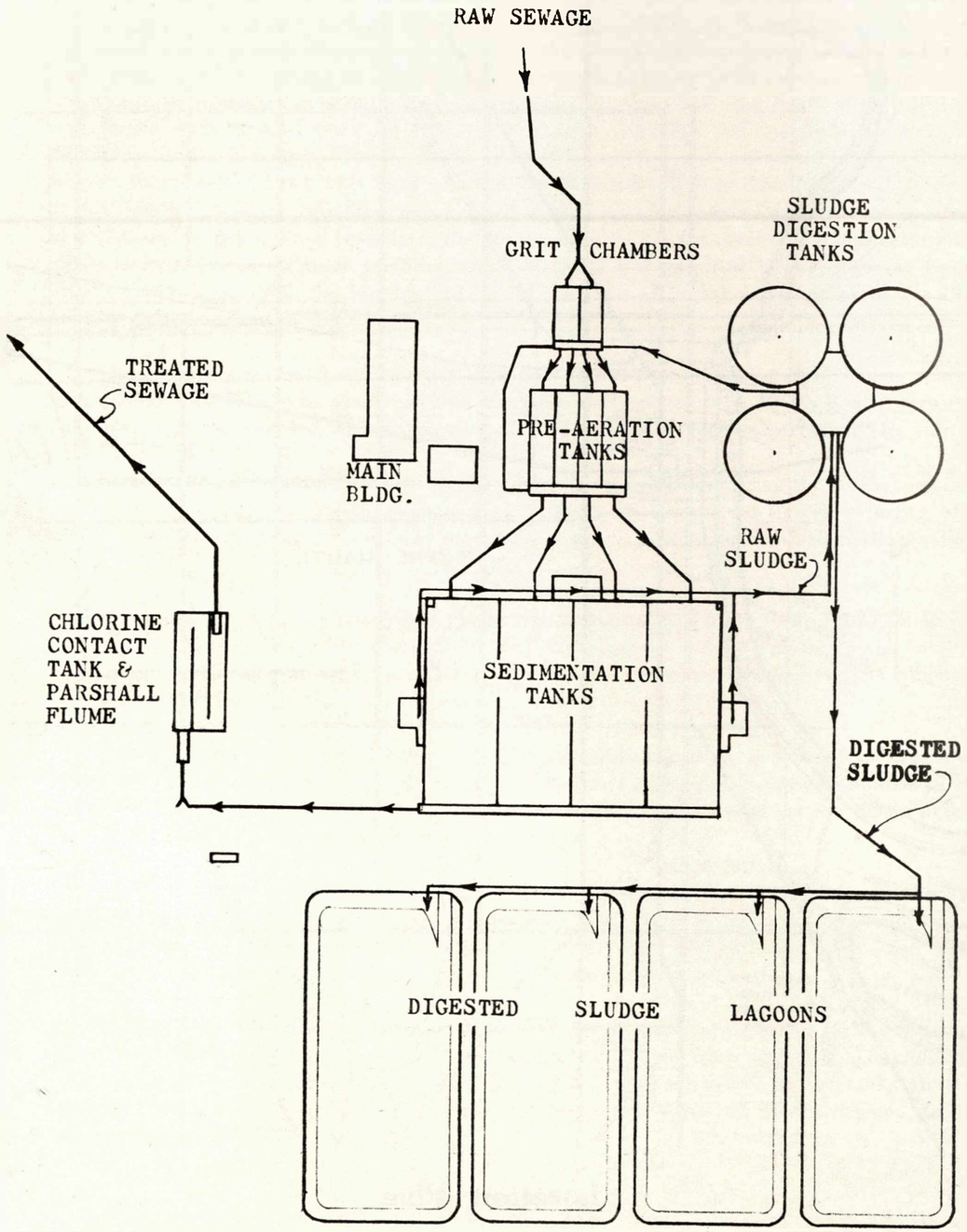
TERRE HAUTE, IND.

SEWAGE DISPOSAL PROJECT



Location Plan

FLOW DIAGRAM
OF TREATMENT PLANT



BASIC DESIGN DATA

Design Population and Sewage Flows

Approximate design year	1982
Total population	80,000
Sewered tributary population	70,600
Average daily flow, mgd.	20
Maximum daily flow, mgd.	28

Sewage Pumping Station

Rack Building

Maximum inflow, mgd.	60
Bar racks, number	2
Bars	1/2-in. bars 3/4-in. clear openings
Method of cleaning	Mechanical raking from upstream side
Disposal of screenings	Hauled away for sanitary land-fill or incineration

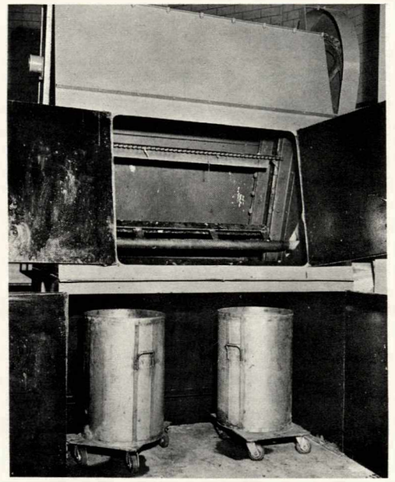
Pump Building

Maximum pumping (three pumps), mgd.	40
Total installed pumping capacity, mgd.	50
Future installed pumping capacity, mgd.	60

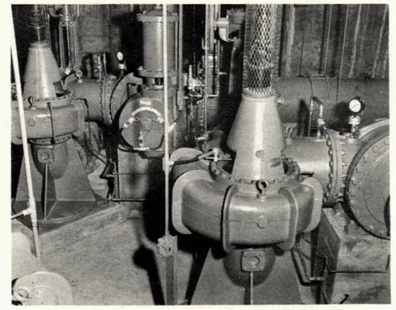
Sewage Treatment Plant

Grit Removal

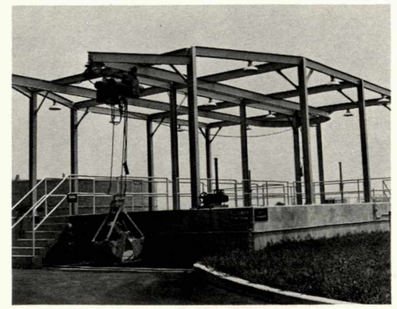
Aerated grit chambers, number	2
Width, each	16 ft.-0 in.
Length, each	40 ft.-0 in.
Average water depth, ft.	
at 20 mgd.	10.95
at 50 mgd.	11.4
Detention, minutes	
at 20 mgd.	7.6
at 50 mgd.	3.2
Method of cleaning	Clamshell bucket



Rack Housing



Main Sewage Pumps



Aerated Grit Chamber

Air supply, cfm./ft. of tank length	6
Air diffusers	Fixed nozzles

Preaeration Tanks

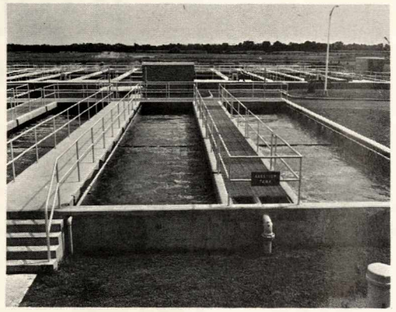
Number of tanks	4
Width, each	16 ft.-0 in.
Length, each	68 ft.-0 in.
Average water depth, ft.	
at 20 mgd.	12.23
at 50 mgd.	12.54
Detention, minutes	
at 20 mgd.	29
at 50 mgd.	12
Air supply, cfm./ft. of tank length	5.15
cf./gal. at 20 mgd.	0.10
cfm./cu. ft. tank	0.03
Air diffusers	Fixed nozzles

Air Supply

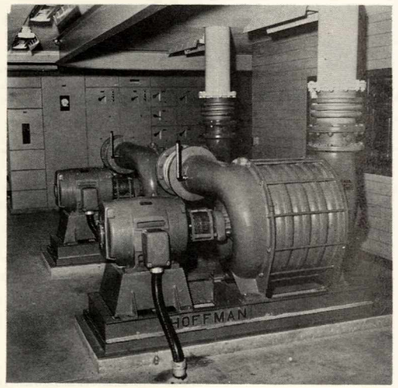
Total average air requirements for plant, cfm.	2480
Number of blowers	2
Capacity, each, cfm.	2800
Type	Centrifugal turbine
Location	Main building

Sedimentation

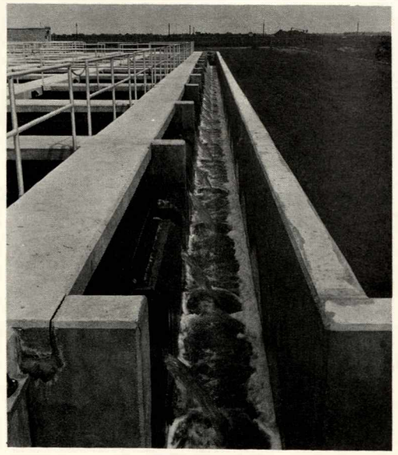
Number of tanks	4
Number of channels per tank	3
Channel dimensions, ft.	
Length	146.0
Width	16.0
Average depth below weir crest	9.5
Total volume, cu. ft.	266,000
Total surface area, sq. ft.	28,000
Total weir length, ft.	2,290
Detention at 20 mgd., hours	2.4



Preaeration Tanks



Air Blowers



Outlet of Sedimentation Tanks

Surface loading at 20 mgd., gal./sq. ft./day	715
Weir loading at 20 mgd., gal./1 in. ft./day	8750
Scum removal, type	Slotted pipe
Scum pumping, type	Pneumatic ejectors

Sludge Collection

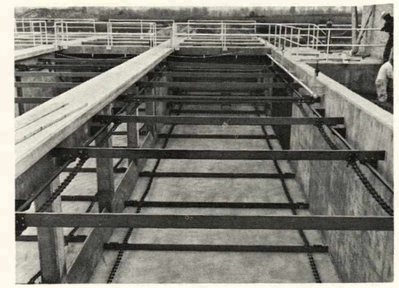
Longitudinal collector, type Cross collectors, type	Rectangular, with flight scraper on endless chains

Sludge Pumping

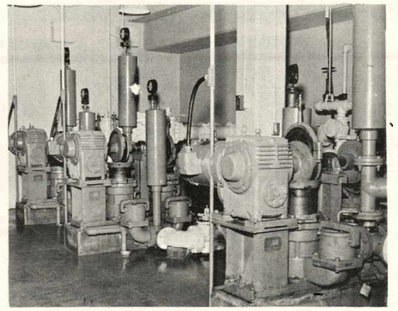
Sludge pumps, number	4
Sludge pumps, type	Plunger
Sludge pump capacity each, gpm.	145
Discharge	To sludge digestion tanks

Sludge Digestion

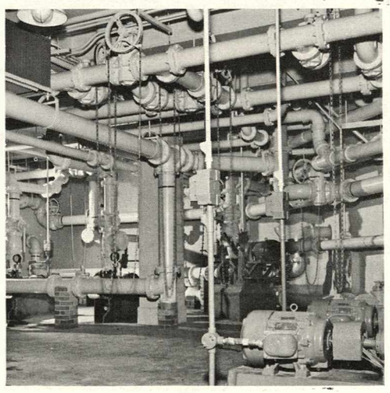
Raw sludge solids, dry basis, lb./day	27,500
Gallons/day, 95 percent moisture	66,300
Sludge digestion tanks, number	4
Dimensions, each	
diameter, ft.	65
effective sidewall water depth, ft.	27
cone depth, ft.	10
Total volume, cu. ft.	400,000
Capacity, cu. ft./capita (including allowance for industrial wastes)	5.7
Primary tanks	
number	2
covers	Fixed
mixers	Vertical draft tubes, three per tank
Secondary tanks	
number	2
covers	Floating



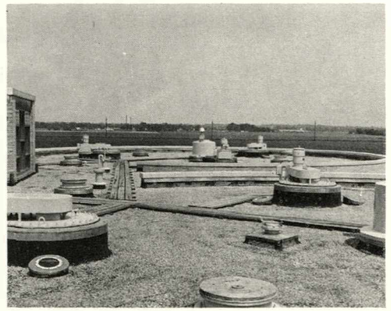
Sludge Collector



Sludge Pumps



Digester Process Piping



Fixed Roofs

Sludge heating	
total capacity, Btu./hr.	1,500.000
type	External combined heater and heat exchanger
number of units	2
fuel, type	Sludge gas or fuel oil

Digested Sludge Lagoons

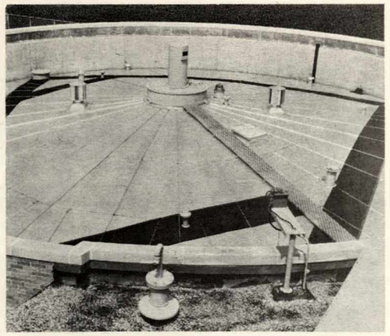
Number	4
Dimensions, each	
length, bottom	214 ft.
width, bottom	91 ft.-6 in.
liquid depth	3 ft.-0 in.
Total effective volume, cu. ft.	256,000

Main Sewage Flow Meter

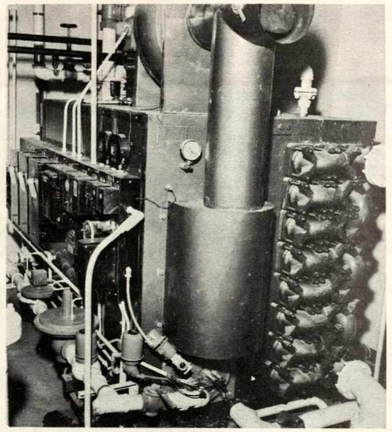
Type	Parshall flume
Location	Ahead of chlorine contact tank
Throat width, ft.	6

Chlorination

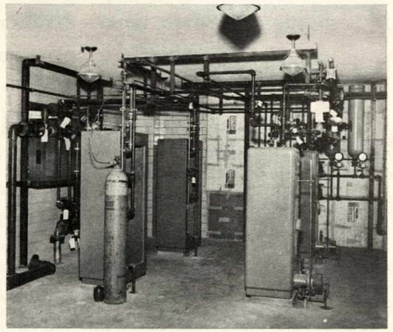
Total installed capacity of chlorinators, lb./day	8000
Number of units	2
Dosage with one unit at 20 mgd.	24 ppm.
Dosage with two units at 50 mgd.	19.2 ppm.
Points of application (Preaeration tank and chlorine contact tank)	2
Chlorine contact tank, dimensions, ft.	
width	37
Length	85
water depth at 20 mgd.	10.43
Volume at 20 mgd. cu. ft.	32,800
Dentention at 20 mgd., minutes	18



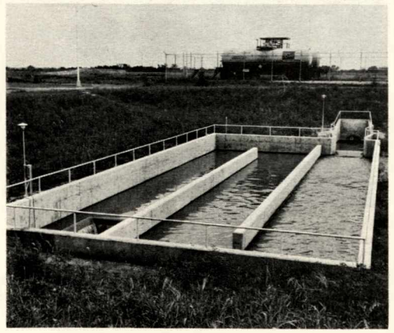
Digester Floating Cover



Sludge Heater

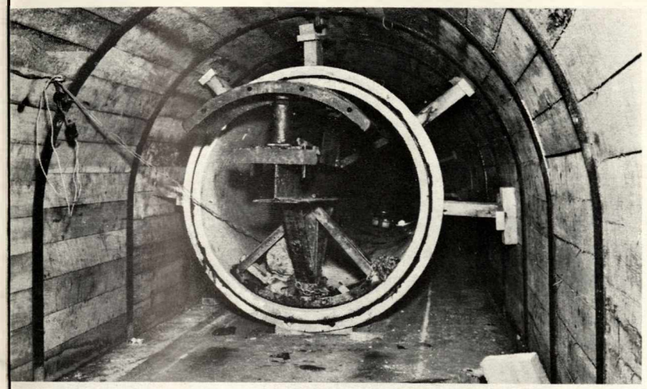


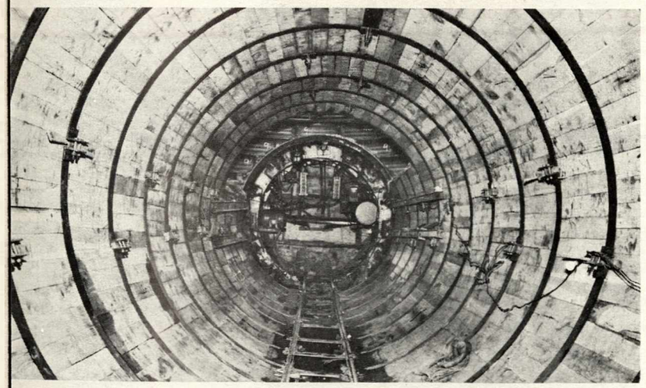
Chlorinators

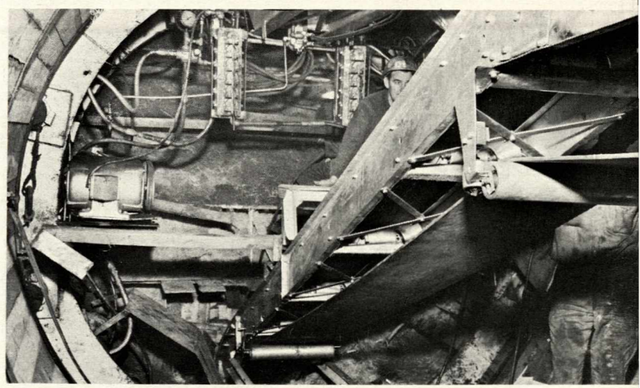


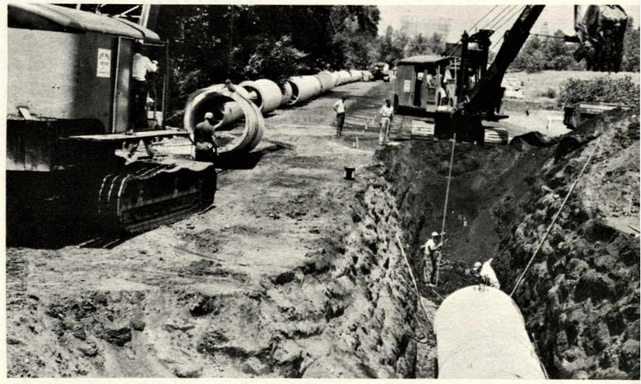
Parshall Flume & Chlorine Contact Tank

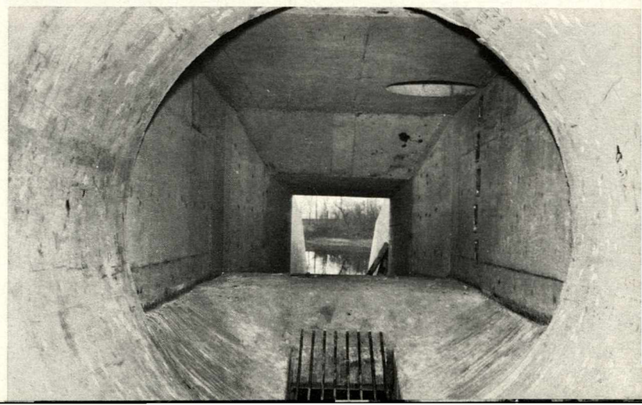
CONSTRUCTION SCENES — CONTRACT NO. 1



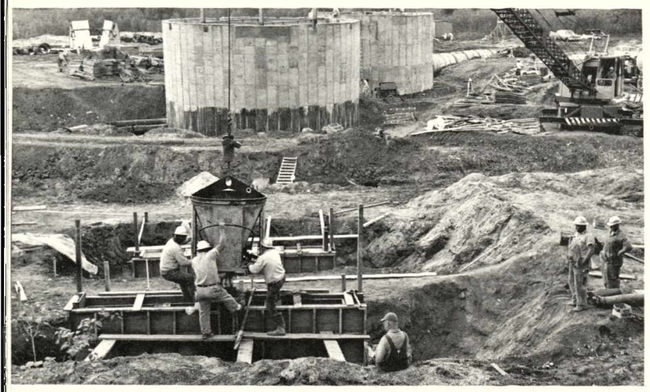


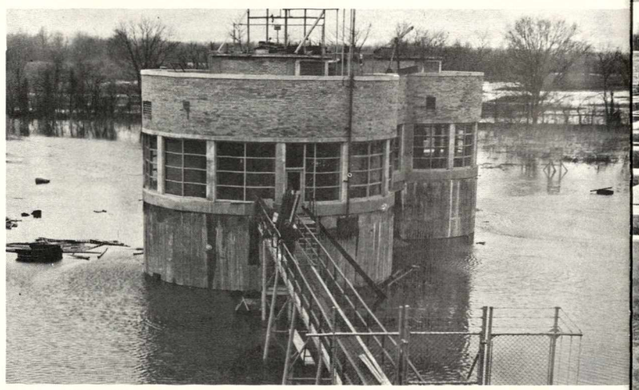




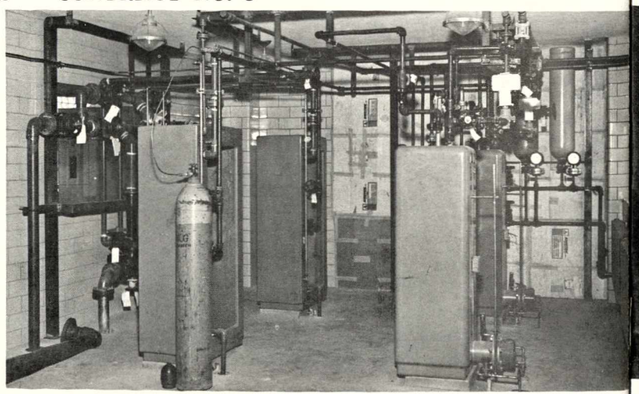


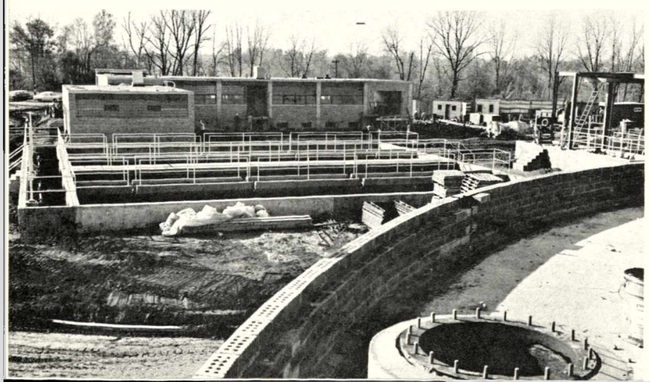
CONSTRUCTION SCENES — CONTRACT NO. 2

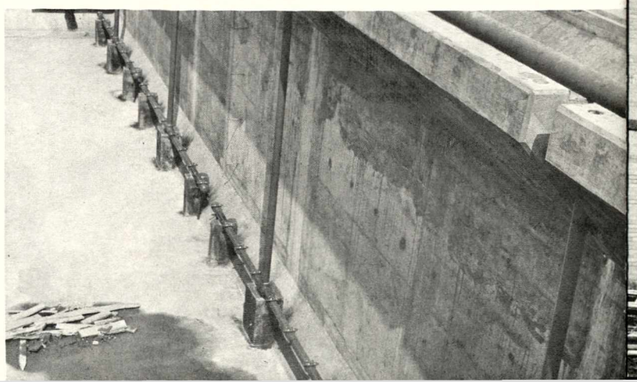
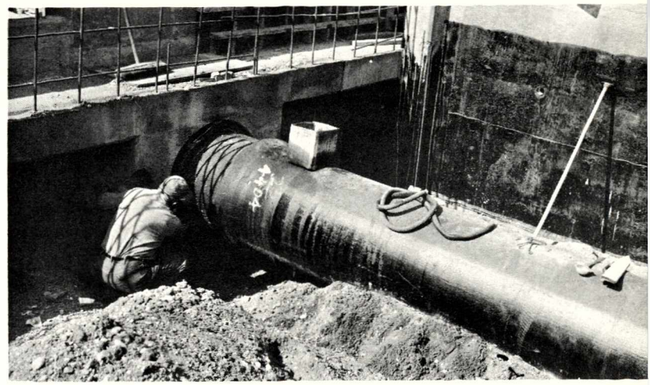
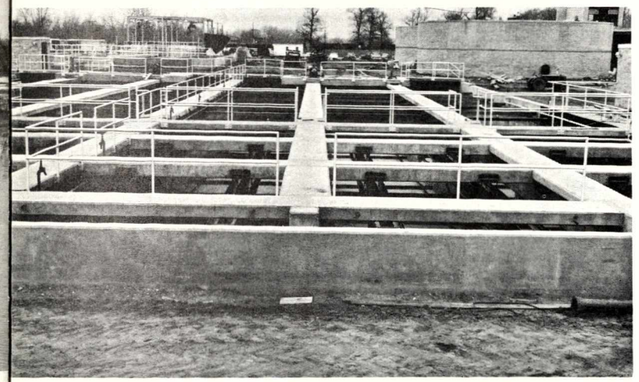
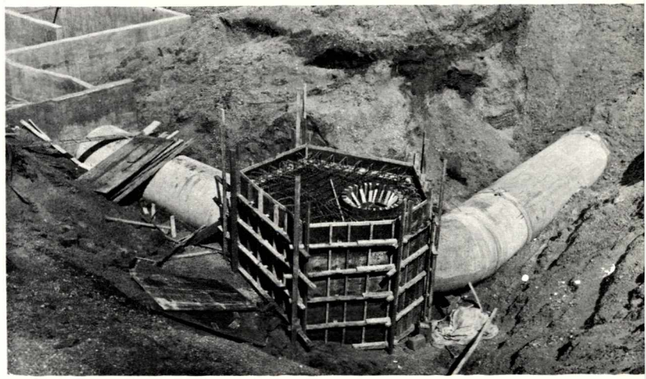
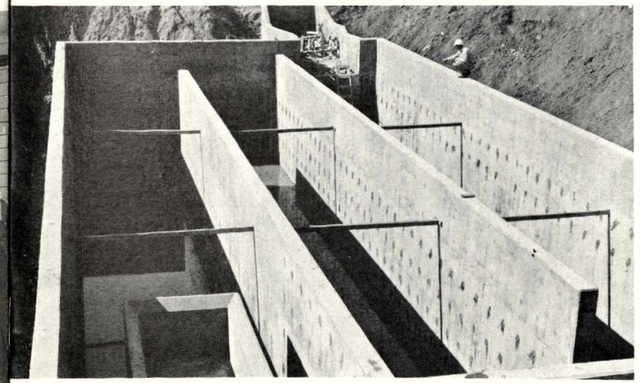
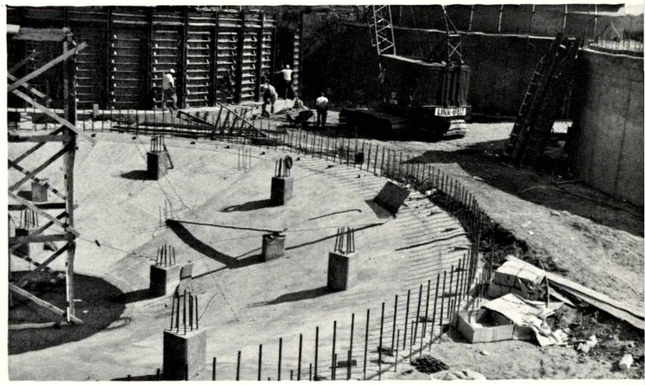
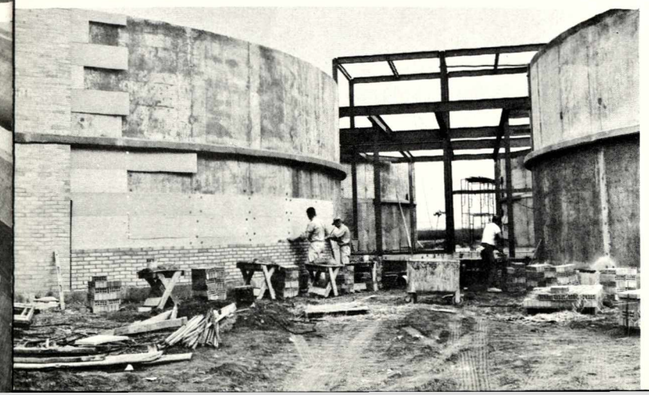
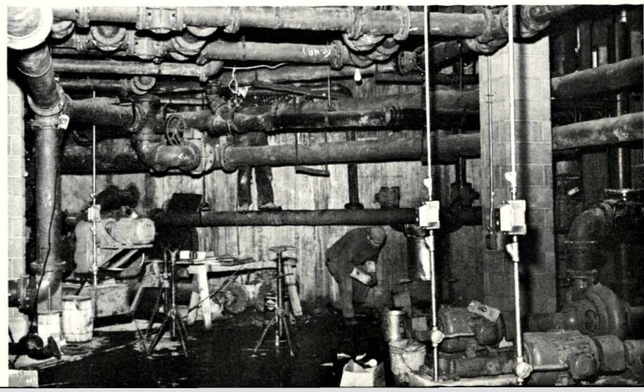




CONSTRUCTION SCENES — CONTRACT NO. 3







CONSTRUCTION SCENES — CONTRACT NO. 3